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Trends in Bathing Beach and Swimming Pool Sanitation*

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FEDERAL agencies are charged with the responsibility of the control of interstate or interprovince transmission of communicable diseases and, since modern transportation now causes all local conditions to be of interstate or interprovince concern, these agencies are vitally interested in bathing beach and swimming pool sanitation. The federal agencies are generally not so provided with personnel and funds as to permit of carrying on research in this field, but have encouraged studies through publication of information relative thereto and have rendered advisory co-operation and moral support. The federal agency may properly act as a clearing house for information and guidance, as its representatives view the field from a broad viewpoint and are, therefore, less likely to be biased in their opinions of the findings of research.

Bathing Beaches

The practice of bathing and swimming in natural waters is as old as man, and became of significance from the standpoint of health only when man habitated in such groups as to cause contamination of the adjacent water through the effects of surface run-off, water carriage methods of sewage disposal, and transportation over the water. As population became more congested, these effects became more pronounced and some of the typhoid and other intestinal diseases of the past may be properly attributed to bathing places. As other nuisances occurred, greater and greater effort was made to treat the wastes so as to eliminate or reduce the existing hazard.

A factor too often disregarded is the contamination introduced by the bathers where great numbers congregate in a relatively small area. The effect is less pronounced where stream flow, currents, or wave agitation exist than is the case in quiescent or semi-quiescent water, such as a calm lake. In addition to the intestinal disease hazard due

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to the presence of carriers and careless personal habits of some of the bathers, there is also imminent danger due to eye, ear, nose and throat infection and even venereal disease. It must be borne in mind that many of those present at bathing beaches use unsterilized suits, enter without having taken cleansing baths, and are less attentive to personal hygiene and feel less restraint regarding infections they may have and their personal habits while closely adjacent to others, than are those in swimming pools.

It is the writer's belief that the time is close at hand when the sanitarian's authority for the use of a beach will be predicated upon the fact that the quality of the natural water equals that required for swimming pools and where the congestion justifies it, the requirement of physical examination, cleansing bath, sterilized suits, toilet facilities and educational guidance of personal habits. Unsatisfactory congestion can be overcome by providing more extensive bathing beaches with equal attractions, and in certain cases by chlorination.

The first serious attempt to purify the water at bathing beaches was the application of chlorine from a chloro-boat at Washington, D.C., in 1922. This has been supplemented by the work near Detroit and other places.

The scientific development and more exacting operation of swimming pools during the past five years have brought many to the conclusion that the swimming pool is a safer place to bathe than most natural bathing places. Unless great strides are made in the elimination of pollution affecting natural bathing places and unless there are developed practical means of overcoming the contamination introduced by the bathers, the artificial pool will continue in greater and greater favour. However, very serious thought is now being given to the subject of natural bathing places and much excellent research and correctional work is under way. The need is, however, that more local health authorities study these conditions and ascertain the quality of the water at beaches during heavy bathing loads.

Brief History of the Swimming Pool

After the era of the "ol' swimming hole," it seems from the literature that the first step towards pool development was the enclosure in rivers. This involved the creation of a false bottom and a curbed area with normal current flow through it. In some cases this was later embellished by making it a water tight compartment and introducing city water therein.

We find that in 1880, or shortly thereafter, the first public baths were introduced in Philadelphia. These earlier public baths consisted of indoor showers and individual baths and laundries, and in the late eighties or early nineties the beginnings of the outdoor baths and pools were noted. In 1900 Dr. Baruch found that there existed in the United States a total of 67 public pools, and Crane found that this had increased

to 540 by 1931. A questionnaire census in 1927 revealed 3,212 public and private pools in cities of over 5,000 and no doubt this class has grown to more than 5,000 now.

In addition to the increases in the number of public and club pools, we find development in other directions. Beginning with the installation of the first college swimming pool at Brown University in 1906, we have progressed to the point where the great majority of all the colleges, as well as the primary and secondary schools, consider the pool as a very necessary part in the physical development of the student. The Army and Navy departments have recognized the importance of the pool, if we are to judge by the steady increase in the number of such structures at training schools and encampments.

As regards the construction and operation of pools and the improved methods of maintaining a safe water, we find that the first development was the use of recirculation for purification at Pawtucket, R.I., in 1906. Filtration had been used during a few years prior to that date for clarification and conservation of heat.

About this time experiments began with the use of hypochlorites and copper sulphate and later there came into use liquid chlorine, ultra violet ray and ozone.

Apparently serious attention was not given to the matter of the transmission of diseases in swimming pools until the early part of the twentieth century, and belief in such a conception was not generally accepted until much later. In 1915 Dr. Manheimer cited 19 authorities who reported the contraction of venereal, ocular, aural, or intestinal diseases in pools. This matter was not brought to an impressive status until Hinman, in 1929, classified the diseases which could be contracted in swimming pools. Added emphasis resulted from the publishing of the 1929 report of the Joint Committee on Bathing Places, and the more recent work on skin diseases, such as that carried on in Detroit and other cities.

The first concrete standards were those of the American Association for Hygiene and Baths, which were published in 1915. This was followed by the appointment, in 1918, of the Committee on Swimming Pool Standards by the American Public Health Association and the appointment, in 1920, of a like committee by the Conference of State Sanitary Engineers. In 1923 each committee published reports on physical, chemical and bacteriological standards and on operation. In 1925 these committees were combined and, after the submission of yearly progress reports, published in 1927 rather complete standards. This was supplemented by a report on foot diseases, bathing beaches and wading pools in 1929.

The present trend may be divided into General, Construction, Water Treatment, Operation, and Control of Communicable Diseases, and will be treated separately.

General Trend

Most important of all under the heading of general trend is that of standardization. Great impetus was given the sanitation of swimming pools and public confidence was invited through the publication of the Standards by the Joint Committee. These standards are now serving as a guide for the majority of states and municipalities and will, no doubt, become the basis of statutes. The general adoption of such a standard will make for uniform swimming pool sanitation. A like standardization of the method of rating pools is highly desirable.

The tendency today is to establish bathing places for the majority of the population, and we are rapidly approaching the time when all-year pool facilities will be available to the public at a small cost, rather than only to members of clubs and educational institutions.

Realtors have, during the past five years, availed themselves of the growing public interest, and are more and more using the public swimming pool as a means of encouraging purchases in new real estate developments. The pool is frequently installed before the land is offered for sale.

Public officials, educational authorities, and the public generally will come to realize more fully the importance of the findings of the Committee on Curriculum Research of the Society of Directors of Physical Education. These findings showed that pool and beach recreation received the highest general average, and swimming and diving the highest individual averages, when scored with other recreations, on the basis of their contribution to physical and organic growth, traits and qualities of good citizenship, social and moral ideals, psychological development, skill for self-protection and aid to others and so forth. As economic development increases the leisure time of man, more and more important becomes the need of beneficial recreations to absorb that time.

Construction

The trend in construction has been toward larger pools, particularly in the case of outdoor pools. Improvements have been made in the methods of water introduction and withdrawal and the exclusion of surface drainage. More and more are spectators being excluded from the pool walkways and more regard is being paid to factors affecting the physical safety of the bather. There is a decided tendency to provide recreational facilities within and adjacent to the bathing area. Brilliant surface and attractive underwater illumination, for the purpose of encouraging night use, are being given much consideration at this time.

Water Treatment

Although the fill-and-draw and the continuous-flow pools can be

operated safely, the limitations placed upon their bathing load suggests that as the popularity of bathing increases, these will be found to be, in most cases, wholly inadequate. The re-circulation system, with proper treatment, is by far the best, as it makes possible more definite control of sanitation. The present development is towards this method.

The present practice leans towards increased filter area, more rapid wash and more frequent filtration of the entire content of the pool. If recent designs are indicative, we may find the use of gravity filters to be the future vogue.

The realization of the importance of the hydrogen-ion concentration and mineral alkalinity, because of their bearing upon skin irritation, emphasizes the need of carefully controlling the introduction of chemicals. This fact has brought about the installation of chemical receiving chambers and definitely controlled chemical feed machines ahead of the filters. It is not doubted that future construction will trend in this direction.

Although satisfactory results have been secured from ozone and ultra violet ray sterilization, the trend in the more recent past has been towards the use of liquid chlorine. All three have their advantages, but the outstanding advantage of chlorine is the possibility of maintaining a residual sterilizing agent in the pool to overcome the pollutional load introduced by each new bather. Sodium hypochlorite and chloramine (ammonia and chlorine) are now subject to considerable investigation. The former is said to lack the irritating effect when a high residual is carried, and the latter, in addition to exhibiting this characteristic, has the advantage of greater stability, more powerful germicidal effect, and the prevention of after growths. A recent design calls for chlorination ahead of filtration, followed by treatment with ozone and ultra violet ray. Provision is made for passing the water from the pool through the ozone and ultra violet ray machines without going to the filters. This arrangement economizes on filter area and filter operation, but loses the advantage of a residual sterilizing agent in the pool.

Operation

Although there is much to be hoped for in regard to dependable operation, it can be safely said that improvement is under way. There is an increased tendency to maintain pools pleasing to the eye, to make sufficiently frequent tests to insure sterilization, and to keep daily records on pumpage, periods of filtration, turbidity, alkalinity, hydrogen-ion concentration, temperature, residual chlorine, and pounds of chemicals used. However, there is need of increased attention to these factors, together with the need of periodic bacteriological tests. In certain cities where tests are not made by the municipality, pool operators are organizing for the purpose of securing private laboratory control and other co-operation.

Control of Communicable Diseases

It is believed that with proper operation of the pool, proper treatment of the water, including sterilization, and examination of bathers to eliminate those having infections, the probability of contracting a disease in the pool is remote. The more difficult problem is that of diseases of the feet, which is not so easily mastered. However, with the elimination of canvas mats, the avoidance of wood walkways, and the periodic sterilization of all surfaces which come in contact with the feet, much control is being established. The practice is to sterilize frequently all walkways, shower floors, ladders, etc., with chlorinated lime or chlorinated soda, and consideration is being given to the desirability of having each bather walk through chlorinated lime, or the like, before entering the pool.

The older system of an elective shower bath or merely a regulation is being supplanted, particularly in out-door pools, by the compulsory cleansing shower bath before entrance to the pool.

In conclusion, it is desired to caution the owners and operators of swimming pools that if they are to profit by a continued increase in public interest, they must provide pools which are so constructed as to make possible adequate control, and these pools must be so operated as to insure proper protection. Complete and accurate records must be kept regarding the operation, and data must be provided which will dispute any claims of or rumours about the contraction of infections in pools. Every operator has before him the opportunity for research on any debatable point.

Third Canadian Conference on Social Work

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Studies on B. Dysenteriae Sonne*

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BACTERIOLOGICAL and serological data relative to 20 strains of B. dysenteriae Sonne which were isolated from cases of acute intestinal intoxication, infectious diarrhoea or dysentery in infants and children from October 1928 to June 1930 have been reported.[1, 2]. The present communication is concerned with similar data which pertain to those strains and to 30 additional strains obtained from June 1930 to February 1931.

Of the 30 new strains, 12 were isolated from cases diagnosed clinically as intestinal intoxication in infants; one of the 12 strains was obtained from the colon at post mortem. One strain was isolated from an infant brought to the hospital's outdoor department, and one from a contact of a case of acute intestinal intoxication. From children aged from 2 to 12 years, admitted under various diagnoses including intestinal intoxication and dysentery, 11 strains were cultivated. Pyelitis cases yielded 2. One culture was given to us by Dr. A. L. McNabb, Director of Laboratories, Ontario Department of Health. The stool specimen from which this culture was isolated (in January 1931) was sent to the Department of Health Laboratory from a small town in Ontario, the patient being a girl about six years of age, suffering with severe diarrhoea. Two cultures were isolated from the stools of adults with symptoms of severe diarrhoea. Twenty-eight cultures were thus isolated from faeces; one from urine; one from the colon at post mortem examination.

The clinical data respecting the cases from which these cultures were isolated form the basis of a separate report.[3]

Bacteriological Findings

The most important finding regarding the bacteriology of the new strains was the utilization of lactose in peptone water medium with the production of acid within 18 hours by two of 30 strains. These two strains also produced acid in medium containing saccharose, and acidified and coagulated litmus milk within 18 hours. The other strains produced acid in medium containing lactose in from 5 to about 14 days, and in medium containing saccharose in from 8 to 20 days. Litmus milk was slowly acidified and coagulated by the twenty-eight strains, as long as 27 days being required to complete the change. The other bacteriological and biochemical reactions conformed to the description previously given.

The rapid utilization of lactose emphasizes the need for very special care in the examination of the differential plates upon which faeces cultures have been planted, since it offers the suggestion that there may be strains which

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rapidly attack the lactose in the differential medium, and which might not be selected for further identification. MacConkey bile salt lactose agar was the differential medium regularly employed in our work. This medium consisted of plain agar to which was added "Difco" sodium glycocholate, 1 per cent "Pfanstiehl" C. P. lactose (dry sterilized in a glass bulb) and 0.2 per cent of a 1 per cent aqueous solution of neutral red indicator. It was titrated to pH 7.8 before autoclaving. Colonies of B. dysenteriae Sonne upon this medium were about two millimeters in diameter, rather convex, and semi-opaque. They were finely granular and had a regular margin. They exhibited a creamy colour tinged by a faint pink, and in addition were larger and more opaque than the colonies of B. dysenteriae Flexner, or Schmitz, or the typhoid bacillus. When plates containing Sonne colonies were permitted to stand at room temperature for several days, the colonies became more pink, until finally they could not be differentiated from B. coli colonies in colour.

Agglutination and Absorption Tests

Rapid slide agglutination was attempted with known cultures of B. dysenteriae Sonne, and the agglutinating sera which had been prepared using the Nabarro and Ridgers strains as antigens.[1] With a fresh culture and a 1.10 dilution of a serum, the titre of which was 1:2560, in a 0.9 per cent saline buffered with sodium and potassium phosphates to pH 7.4, the results were exceedingly satisfactory. A drop of the serum was placed on a clean glass slide and a portion of the colony selected was rubbed into the drop by means of a bacteriological loop. By the time the bacteria were rubbed off the loop into the serum dilution, agglutination, when positive, had occurred. The flocculi were so large as to be readily seen with the naked eye. A control consisting of saline and bacteria showed no evidence of clumping. This method was so rapid and so satisfactory that it was adopted for regular procedure in the examination of stool, urine, or other cultures in which Sonne bacilli might be expected to be present. Within eighteen hours after admission of the patient it was possible to learn whether B. dysenteriae Sonne was present in cases of severe diarrhoea or dysentery.

The twenty strains of dysentery Sonne bacilli which were isolated prior to June 1930 were placed in two apparent serological groups.[1] A serum produced in a rabbit by using as the antigen a strain sent by Dr. Nabarro of London, England, agglutinated fourteen strains which were isolated in our hospital, and also four received from other laboratories. The other six strains isolated in our laboratory were similar in all respects to the Nabarro culture, but were not agglutinated by the Nabarro agglutinating serum. One of these cultures, the Ridgers strain, was selected for the production of an agglutinating serum. This serum agglutinated the six cultures which were not clumped by the Nabarro serum and failed to agglutinate our fourteen cultures and the four from elsewhere, which the latter serum consistently agglutinated. The fourteen strains isolated by us and the four received from other laboratories, thus belonged to the Nabarro group, and the remaining six strains fell into a separate serological group, the Ridgers group. It is of interest to note that when these cultures were recently tested (March 1931) after a period of at least a year, the results remained unchanged. The Ridgers cultures are

agglutinated only by the Ridgers serum; the Nabarro cultures by the Nabarro serum. The strains were kept in the icebox on plain nutrient agar slopes, and were subcultured about once per month. During this period they have been in stock, they have been transferred about twelve times.

When these Nabarro and Ridgers sera were used in slide agglutination tests, the same difference existed as was observed in test tube agglutination; that is, the Nabarro strains were agglutinated by the Nabarro and not by the Ridgers agglutinating serum, while the Ridgers strains were agglutinated by the Ridgers and not by the Nabarro serum. When the new strains isolated since June 1930, were tested from the first differential plate, they did not agglutinate by the slide method with the Nabarro serum, but were completely agglutinated on the slide by the Ridgers serum. Therefore, all colonies for which there existed a possibility of their being Sonne bacilli were tested primarily with the Ridgers serum and then with the Nabarro serum. Thirteen strains* were found by means of rapid slide agglutination technique using the Ridgers serum.

The finding of two serological groups suggested the desirability of ascertaining whether or not identical results could be reproduced by using agglutinating sera produced by other strains of the Nabarro and Ridgers groups. Three representative strains, namely, Dell, Thain and Wildridge,—were chosen from the Nabarro group; from the Ridgers group, the Devlin, Lyman and Kelbie strains were selected. Agglutinating sera were produced in rabbits with these six strains as antigens, using the technique previously employed.[1] Agglutination and absorption tests were then carried out with the new sera and the fifty-four Sonne strains, twenty-four old and thirty recently isolated.

For purposes of illustration, of the total group of 54 strains investigated, certain examples have been selected. (Table I.) From this table it is seen

TABLE I

AGGLUTINATION TESTS WITH OLD AND NEW STRAINS

Strain	Nabarro Serum	Ridgers Serum	Dell Serum	Thain Serum	Wildridge Serum	Devlin Serum	Kelbie Serum	Lyman Serum
Old								
Nabarro 681	2560	0	2560	10240	10240	1280	640	640
Dell	2560	0	2560	10240	10240	1280	640	1280
Thain	2560	0	2560	10240	10240	1280	640	1280
Ridgers	*0	2560	0	0	0	320	640	320
Kelbie	0	2560	0	†80	†80	320	640	1280
Devlin	0	2560	†80	†80	†80	1280	1280	640
New								
Adams	0	2560	80	10240	10240	1280	1280	1280
Chapelle	0	2560	±320 ∓1280	10240	10240	1280	1280	1280
Hicks	2560	2560	1280	10240	10240	1280	1280	1280
Goodwin	2560	0	2560	10240	10240	1280	1280	1280

*=No Agglutination.
†±∓=Incomplete Agglutination.

*Since this material was prepared for publication (June 1931), 24 additional strains have been identified by slide agglutination and subsequently confirmed biologically. A total of 74 strains of B. dysenteriae Sonne has been isolated up to November, 1931.

that the old strains belonging to the Nabarro group were agglutinated by the sera produced by three additional strains from the group, Dell, Thain, and Wildridge, while the Ridgers strains were agglutinated in very low dilution or not at all. The three sera obtained by the use of the Devlin Kelbie and Lyman strains (Rid)* as antigens agglutinated the cultures of both the Nabarro and Ridgers groups.

When the new cultures, obtained after June 1930, were tested immediately after isolation, they were agglutinated by the Ridgers serum and not by the Nabarro serum as shown by Adams and Chapelle strains, Table I. When some strains were carried on plain nutrient agar for a number of weeks before the tests were carried out, both sera agglutinated them. (Hicks.)

If a longer period of time was allowed to elapse before the test was done, the culture was agglutinated by only the Nabarro serum. (Goodwin.)

The new sera representative of both groups (Nab)* and (Rid), with the exception of the Dell serum (Nab), agglutinated all the strains equally well. Some strains were agglutinated to the full titre by the Dell serum; with others the result were incomplete and did not reach the limit of the serum's titre.

Absorption tests were carried out with all sera and the fifty-four strains. The old cultures belonging respectively to the Nabarro and Ridgers groups removed the agglutinins from their corresponding sera. The Nabarro strains also reduced the titre of the Ridgers group sera, some strains entirely absorbing all agglutinins from the serum under consideration. The Ridgers strains did not remove the agglutinins from the various sera belonging to the Nabarro group.

The absorption tests using the new strains were not carried out for some weeks after the agglutination tests had been completed. When tested, strains, as Adams and Chapelle (Table I) which had been placed in the Ridgers group according to agglutination tests were now placed in the Nabarro group. All the new strains completely absorbed the agglutinins from the Nabarro group sera; they either removed all the agglutinins or considerably reduced the titre of the Devlin, Kelbie and Lyman sera belonging to the Ridgers group.

These aberrant findings together with those resulting from the absorption tests using the old cultures show that the sharply defined results obtained with the first twenty-four strains and the Ridgers and Nabarro serum were not repeated in the study with the six additional sera. The Dell, Thain and Wildridge sera reacted like the Nabarro serum as anticipated. However, inconsistencies were obtained with the representatives of the Ridgers group, namely, Devlin, Lyman, and Kelbie. With some strains these sera seemed to belong to the Nabarro group, with others to the Ridgers. Further exploration of the subject was then undertaken in an effort to settle these confusing observations.

A number of cultures and Nabarro and Ridgers agglutinating sera were sent to Miss M. B. Coleman of the Division of Laboratories and Research of the Department of Health, New York State, who had kindly consented to test them. The biochemical and carbohydrate reactions which she obtained, were in accordance with the results given by the same strains when tested in this

*Abbreviations used are (Rid) for Ridgers and (Nab) for Nabarro.

laboratory. She expressed the opinion that the serological differentiation into two groups was based on the rough and smooth characteristics of the strains. A "rough" colony was agglutinated by the equivalent of the Nabarro serum; a "smooth" colony from the same strain by the Ridgers serum.

The investigations of Leuchs and Plockman,[4] Braun and Weil,[5] and Braun and Baake,[6] and the recently reported studies of Koser,[7, 8] on dissociation of the Sonne dysentery bacillus make this explanation of these results seem most probable.

All our strains were, therefore, streaked upon plain nutrient plates and were incubated for twenty-four hours at 37° C after which the colony formation was examined. The old cultures had been sub-cultured many times since they were isolated. The new cultures were still growing upon the first agar slope to which the colony was transferred from the plate containing the MacConkey medium. All the cultures belonging to the old Nabarro group showed "rough" colonies on the plain agar plates. They were not stable in unbuffered 0.85 per cent sodium chloride and were completely removed from suspension by heating at 100° C for one hour.

The cultures belonging to the Ridgers group showed mainly "smooth" colonies. They formed stable suspensions in 0.85 per cent sodium chloride and were not removed from suspension by heating to 100° C. The 18 "Rough" and 6 "Smooth" cultures had become stable and remained so for at least a year.

None of the thirty new strains showed exclusively "smooth" colonies; four showed only "rough" colonies. Of the remaining 26 strains, 9 had about equal numbers of R and S colonies, and in 17 the R form predominated. The R and S colonies were similar in appearance to those described and illustrated by Koser.

The hypothesis that R and S types of cultures accounted for the serological differentiation of the cultures may then be applied to the interpretation of our results. The Nebarro, Dell, Thain and Wildridge cultures were "rough" and sera produced using them as antigens, agglutinated "rough" cultures (Table I.) Similarly the "smooth" Ridgers serum agglutinated "smooth" cultures. Cultures when freshly isolated were seen to be "smooth." Therefore, the Ridgers serum was efficacious, while the Nabarro serum failed to agglutinate them. The transition from smooth to rough was obtained easily with all strains excepting six, and occurred soon after isolation; hence all but six old cultures were agglutinated by the Nabarro and not by the Ridgers serum.

The change from S to R form has been seen to take place within 4 days when grown in broth. The culture isolated from the case which occurred out of Toronto was agglutinated by the Ridgers serum when first obtained in January 1931. In March, having been carried on plain agar in the interval, it was agglutinated by the Nabarro and not by the Ridgers serum. At that time the colonies were seen to have become rough. When cultures were in the course of dissociation and about equal numbers of rough and smooth forms were present, they were agglutinated by both sera. This was observed with some of the new cultures such as the Hicks strains (Table I), when tested shortly after isolation with the Nabarro and Ridgers sera. The results obtained with the new strains and the Dell serum (Nab) are due to the mixture

of R and S bacilli, while the cultures apparently were mainly R in type when tested with the Thain and Wildridge sera (Nab). The uniformity of results given by the Devlin, Kelbie and Lyman sera (Rid) and the new strains is dependent upon the fact that these sera were produced by antigens composed of mixtures of R and S types.

To substantiate the above findings further evidence was sought from the study of dissociation in a few strains. These cultures were selected because both R and S forms were seen in the first plate made from the agar slope culture as shown in figure 1. Typical R and S colonies, as shown in figures 2

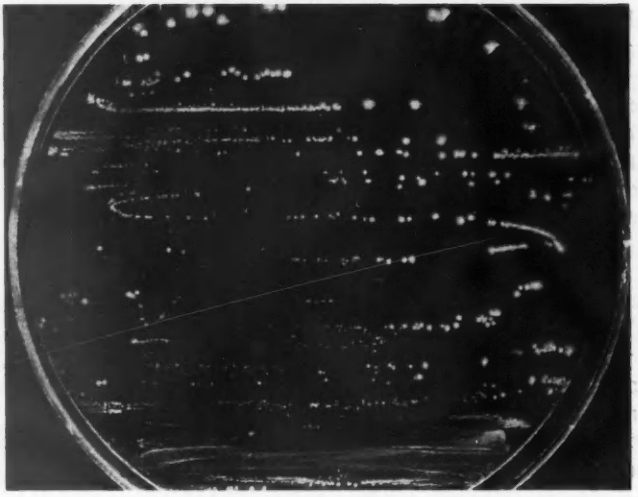

FIGURE 1.

Nutrient agar plate showing Rough (R) and Smooth (S) colonies. (Strain Jones.)

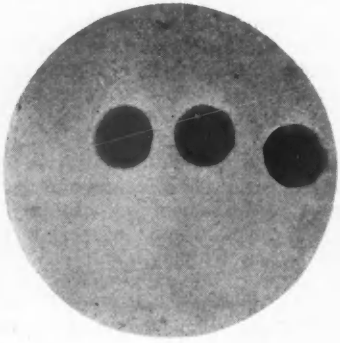

FIGURE 2.

Smooth (S) colony from plate. (Strain Jones.)

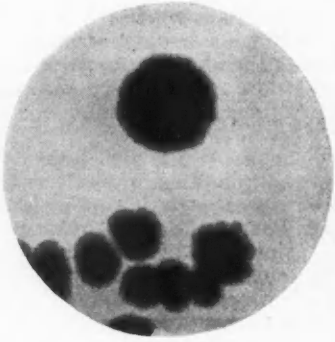

FIGURE 3.

Rough (R) colony from plate. (Strain Jones.)

and 3, were chosen from this and streaked upon fresh plates; this procedure was repeated at daily intervals for a period of several days. When cultures seemed to be either entirely R or S, agglutination tests were carried out. Table II shows the results of these tests. The final serum dilutions did not exceed

TABLE II

AGGLUTINATION TESTS WITH R AND S COLONIES OF B. DYSENTERIAE SONNE

Culture	Nabarro Serum	Ridgers Serum
Pavloy R	1600	*0
Pavlov S	*0	1600
Smythe R	1600	0
Smythe S	0	1600
Gillies R	1600	0
Gillies S	0	1600
Howard R	1600	0
Howard S	0	1600
Titre of Serum	2560	2560

*0 = No Agglutination.

TABLE III

ABSORPTION TESTS WITH R AND S FORMS OF B. DYSENTERIAE SONNE

Absorbing Culture	Nabarro Serum	Ridgers Serum
Gillies R	*0	1600
Gillies S	1600	0
Titre of unabsorbed serum	2560	2560

*0 = No Agglutination.

1:1600 in these tests. Absorption tests, as shown in Table III, were carried out using the Gillies, R and S cultures and the Nabarro and Ridgers agglutinating sera. Gillies R absorbed the agglutinins from the Nabarro serum. The agglutinins were not removed from the Ridgers serum by Gillies R nor did Gillies S absorb the agglutinins from the Nabarro serum, but the latter culture reduced the Ridgers serum.

From one strain, Massovitch, in October 1931, R and S colonies were selected and transferred to plain agar slopes. After 18 hours' incubation the culture was washed off, suspended in saline and killed by heating for one hour at 56° C. Agglutinating serum was prepared by injecting the R and S suspensions into different rabbits. Results of the agglutination tests carried out with these sera are shown in Table IV.

TABLE IV

AGGLUTINATION TESTS WITH R AND S SERA

Culture	Serum—Massovitch R	Serum—Massovitch S
Nabarro 681	1:2560	0
Ridgers F. I. 1	0	1:1280

The results of this investigation lead to the conclusion that the Nabarro agglutinating serum had been produced by an antigen which was composed of pure R forms, and the antigen which stimulated the agglutinins for the Ridgers strain belonged to the S type. Therefore the cultures of the Ridgers group had been S forms, while the Nabarro strains were R types. The Dell, Thain, and Wildridge sera were similar to the Nabarro serum, whereas the Kelbie, Lyman and Devlin sera had been produced by antigens composed of mixtures of R and S forms.

The freshly isolated cultures were agglutinated by the Ridgers serum and not by the Nebarro, because they were predominatingly of the S type. The transition from S to R type usually takes place soon after isolation from the patient. When agglutination tests were carried out with the six additional sera, all the new strains—that is, those isolated since June, were agglutinated by each of these sera because sufficient dissociation had occurred.

The clearly defined serological differences which obtain amongst these fifty strains of the Sonne bacillus suggest the necessity of knowing how any agglutinating serum will react with the R and S forms of its antigen, if consistent dependable laboratory tests are to be obtained.

Conclusions

The study of thirty additional strains of B. dysenteriae Sonne has confirmed the observation previously made with twenty strains, that these cultures may be divided into two serological groups. This division is now to be attributed to rough and smooth types of cultures. When first isolated the strains are smooth, which, without exception was our experience with these fifty cultures of this study and an additional twenty-four subsequently isolated.

Cultivation on ordinary laboratory medium may bring about dissociation and render the cultures rough. Out of a total of fifty cultures six strains have been isolated in which this phenomenon did not occur, and which seem to be stable smooth cultures.*

Rapid slide agglutination, using suitable sera and colonies growing upon the first culture plates, gives quick indication of the presence or absence of B. dysenteriae Sonne.

B. dysenteriae Sonne strains produced acid in medium containing lactose in as short a period of time as 18 hours. These strains were equally rapid in their action on saccharose and litmus milk. They presented no serological differences when contrasted with other strains whose biological activities were more delayed.

In February 1932, a rough variant was obtained from the Ridgers strain which hitherto has been consistently smooth.

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The Need for Uniformity in Vital Statistics*

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THE year 1918 undoubtedly stands out as a land mark in the history of vital statistics in Canada, inasmuch as the first real steps were taken by the Dominion Bureau of Statistics to bring about uniformity in the collection and compilation of vital statistics in the Dominion as a whole. In view of the important part that vital statistics play in safeguarding health, it is surprising that recognition of the need should have come so late, with the consequent loss to the Dominion of much statistical data that would be of great value for the purposes of comparison.

In connection with the action taken by the Dominion Government in the year 1918, it may be of interest to quote the following, taken from the first Report of Vital Statistics of British Columbia in which the Registrar, Mr. H. B. W. Aikman, writes, on June 1st, 1874: "Upon constitutional grounds there may not exist any objection to each province, within its own limits, informing itself on the subject of population; but if the British North America Act be examined, amongst the subjects reserved by the 91st Section for the exclusive jurisdiction of the Dominion Parliament, the item 'Census and Statistics' will be found enumerated, and it seems quite clear that this item is intended to comprise the very information which British Columbia is seeking to obtain, through the medium of the Registration Act, and at her own expense. The British Columbia Act, therefore, like the Registration Acts of Ontario and other provinces, is liable to be practically swept away at any moment; and, in the event of any legislation by the Dominion Parliament on this subject, British Columbia should be prepared to obtain, if possible, a transfer to the Dominion Government of the machinery and records already established under the Provincial Act." Again the following year, "That the Act, in many respects is a most valuable one must be admitted, and it is much to be regretted that the at least concurrent jurisdiction of the Dominion Government over the same subject renders it inexpedient to recommend certain amendments alluded to in my previous Report, and others, which have since been suggested, for more effectually insuring its successful operation, until the question is definitely settled as to whether the collection of Vital Statistics will eventually be performed under Dominion or Provincial authority." That a definite understanding was not reached at that time is a matter for regret.

As you are all aware, there were two important results of the

*Presented before the Section of Vital Statistics, Canadian Public Health Association, Twentieth Annual Meeting, Regina, June, 1931.

Conference of 1918: first, the provinces undertook to obtain the returns of births, deaths and marriages on the prescribed forms as approved by the Conference: and, second, the Dominion Bureau undertook the compilation of these returns on a uniform basis. Thus a most important step towards the eventual attainment of uniformity was taken; namely, recognition of the necessity for co-operation. It was not to be expected that uniformity could be brought about by a single wave of the magic wand, or by the wielding of the big stick. As Bismarck wrote, "Reforms are the fruits of painstaking labour and mutual compromise, and of advancing step by step; they do not spring like Minerva, full grown, from the head of Jupiter."

Sufficient time has now elapsed since the taking over of the reins by the Dominion Bureau to admit of retrospection and to enable us to determine how far we have advanced on the road to uniformity, and whether or not there still remain any obstacles that bar the way to our goal, and that may be cleared away.

Let us review briefly what has been accomplished by the contracting parties. It will, I think, be readily conceded that the Dominion Bureau has endeavoured to the best of its powers to carry out its undertakings. We already have in our hands the annual reports published since the year 1921. These reports are compiled in a uniform manner, and in consequence may be regarded as reliable for comparative purposes. The returns forwarded by the provinces are carefully inspected and in the event of errors or lack of completeness are returned for amendment. It may possibly occur in the future that certain changes and adaptations in these reports may be found necessary to facilitate comparison, either inter-provincial or with other countries, and while I do not think we need have any qualms in leaving the decision in their hands, I feel sure that the Bureau would gladly welcome from outside sources any suggestion or criticism that would enhance the utility of their reports. In determining how far the Dominion Bureau are fulfilling their part of the contract, we must never lose sight of the fact that under the present arrangement their powers of achievement are limited. The Bureau can make use of only such returns as are submitted to it by the different provinces. As long as there is deficiency of any kind whatsoever in the data returned by the provinces to the Dominion Bureau, the need for uniformity will remain, for without accuracy and completeness of data there can be no true uniformity. It is, therefore, incumbent on the provinces to see that every effort on their part is made to secure returns as accurate and complete as possible. Each province, no doubt, has its own peculiar problems to face in the collection of statistics, and, after many years' close association with vital statistics in British Columbia, I can assure you that that province has its full quota.

Permit me to mention a few of the factors that contribute to the difficulty of collecting complete statistical returns for British Columbia. The total area of British Columbia is 355,855 square miles—an area

exceeding the combined areas of England, Scotland, Wales, Ireland, and France. To cover this vast area we have 108 District Registrars, 17 of whom collect returns only from Indians living on the Reserves. The difficulties of communication, the great distance at which many of the people reside from the registration offices, the migratory habits of people in the mining and logging camps, the large number of persons of foreign extraction—all contribute to make difficult not only the collection of statistics but also the dissemination of information regarding the provisions and requirements of the Act. In an endeavour to reach all parts of the province, and in the hope of impressing parents with the importance of registering the births of their children, we have, with the consent of the Postmaster-General, placed large posters in every post-office in the province, and satisfactory results have accrued.

Many registrations of birth, however, are still neglected, in part owing to an impression quite prevalent, and by no means confined to the foreign element in our population, that notification of the birth of a child by the doctor or hospital authorities constitutes registration. With a view to securing greater promptness in the registration of births, and also to control transients, the time limit for registration of births has been reduced from 60 to 30 days. The consequence of ignorance or neglect on the part of parents is reflected in the very large numbers of delayed registrations which continue to be received from year to year. These delayed registrations, numbering many thousands over a period of years, are not included by the Dominion Bureau in determining the birth rate for any given year, and in consequence are entirely lost to the province. While the returns collected by the Indian agents have improved, it is questionable whether they can be regarded as by any means complete.

Turning for a moment to the registration of deaths, there still exists an urgent need for a fuller measure of co-operation on the part of medical men. May we express the hope that eventually the day will dawn when every doctor will realize that his opportunities for service to suffering humanity do not terminate with the death of a patient. A further duty—the duty to the living—remains. That obligation can in a measure be discharged by recording a full and accurate statement of the essential particulars in the medical certificate of death. Without the full co-operation of physicians, vital statistics can never be complete, accurate, or uniform.

I have endeavoured to outline briefly the conditions that obtain in British Columbia as regards vital statistics; possibly conditions similar exist elsewhere. Indifference, carelessness, neglect, ignorance—all block the way to uniformity. Whether or not these obstacles can be removed lies, in the final result, with the individual. As soon as the individual can be brought to realize the important part his co-operation can play in helping to build up the health and well-being of his country —then and not till then will true uniformity lie within the bounds of possibility.

Observations on Rural Public Health Work in Ontario*

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IT may be stated that, in general, at the present time the only places where intensive public health work is being conducted are the cities where a properly organized department of health with a full-time Medical Officer has been provided. For those living outside these large centres adequate public health service is not being provided. Why should not the people on every farm, the residents of every town, village and hamlet receive more of the benefits of organized preventive medicine? Definite progress has been made however during the last fifteen years. In those rural communities where the members of the local board of health have realized the importance of their office and where the M.O.H. is actively interested in the prevention of disease, substantial local progress is achieved.

Improvement in the Reporting of Communicable Diseases

During the past few years there has been an improvement in the reporting of communicable diseases, in placarding, and also in the control of contacts. There has been, too, some improvement in the prevention of these diseases, notably diphtheria. Diphtheria toxoid has been administered to school and pre-school children in a great many rural municipalities and the work is being continued from year to year, or every second year, thus providing for the immunization of new school children. The regrettable thing is that we do not get as many pre-school children as we would wish, for these are the children who most need the treatment, the highest death rate among children being in the age group of from three to five years. This work is more easily carried out in cities, towns and villages, but, in spite of the difficulty, Medical Officers of Health in a large number of rural municipalities are doing effective work, visiting the schools and performing the inoculations there.

In this effort to control diphtheria by active immunization, it is always recommended that the parents take their children to their family physicians for the protective treatment. We are not desirous of taking any part of this work out of the hands of the practising physicians, but I am of the opinion that many physicians are not practising preventive medicine among their patients, and that if we rely on them entirely to do this preventive work, it will not be done.

*Presented at the 15th Annual Meeting of the Ontario Health Officers' Association, Toronto, May, 1931.

The Problem of Nursing Services

The discussion of the control of communicable disease leads one to the question of the nursing service. In this province we have two classes of nurses: the nurse confining her work to the school—the school nurse; and the nurse doing general work in the whole community—the community or public health nurse. In the rural areas, particularly, difficulties have arisen as a result of the transfer of the system of school medical inspection from the Provincial Department of Education to the Department of Health in July, 1924. In my opinion, a mistake was made in permitting, without any time limitation, the continuation of whatever service was in force. It would have been better to specify a certain period of time—five or ten years, at the end of which the service as conducted by the board of education would terminate and the work be assumed by the board of health.

It seems an anomaly that children under the age of five should be looked after by the board of health, while children from six to fifteen are under the health supervision of the boards of education. Moreover, pre-natal and pre-school work is not done by the school nurse. If a nurse is employed in a number of schools in a township, the appointment of a public health nurse working under the direction of the board of health is practically barred.

Unless this system of dual control be dissolved by legislation I see no likelihood that the school boards will withdraw. In fairness to them, however, it must be admitted that they recognized the advantages resulting from nursing service and were instrumental in having legislation passed to establish it at a time when the boards of health had not fully realized its importance. Now, however, that the boards of health are keenly aware of their responsibilities, the service surely should be unified under their control where it obviously belongs.

At present a number of public health nurses are employed by a township, or by two or more townships combined, and it is hoped that there will be more. One of the most important duties that any board of health can undertake is child welfare work, with which this nursing service is so closely linked.

Some progress has been made in rural townships in the inspection of school buildings and grounds by the medical health officer. This service is leading to improvement in conditions, and while it sometimes seems slow, I think that much is being accomplished gradually.

How Rural Areas May Be Better Served

Perhaps it would not be out of place to offer a few suggestions for the improvement of this service, particularly in the rural areas. We have to contend not only with the lack of interest on the part of a few medical officers of health and boards of health, but also with the indifference of the public. We all know that diphtheria is a preventable

disease, and yet there are in Canada about 1,200 deaths from it every year. The same is true of scarlet fever and smallpox. The public must know that vaccination prevents smallpox, and yet how many go voluntarily to their family physician to have their children vaccinated? What can we do about health improvement in Ontario?

(*a*) More intensive local health administration.

We might take a leaf from the book of the Ontario Department of of Agriculture. Every county has a District Superintendent, a graduate of the Ontario Agricultural College, maintained at an expenditure of about two hundred and forty thousand dollars a year for the province. This amount would go a long way towards establishing health units in some of the counties of the province. How is it that the Department of Agriculture can get this amount of money with apparently little effort? I leave you to answer this question.

(*b*) The expenditure of more money on health work.

Good health for an individual or a community is purchasable, like any commodity. In Ontario we spend less than two millions of dollars on public health and, roughly, fifty millions on education. Surely education is not twenty-five times as important as health. The Dominion Government has spent nearly six millions in testing cattle for tuberculosis: not one dollar has been given for the testing of children for the same disease. It would seem almost as if we valued the animal stock in our barns more than we do the human stock in our homes. The Dominion Government is also willing to spend ten millions in the elimination of level crossings in Canada, and the fatalities caused by these level crossings take only a fraction of the lives sacrificed every year to one preventable disease—diphtheria.

(*c*) Better co-operation from the medical profession.

Any public health programme is very largely dependent on the co-operation of the practising physicians. They, in my opinion, would be well advised to turn their minds more and more to the prevention of disease. Every physician is really practising preventive medicine today. When a doctor is called to a case of diphtheria or scarlet fever, he protects contacts in the family by using a prophylactic dose of diphtheria antitoxin or scarlet fever antitoxin. We all agree that they should go a step farther and try to prevent the original case of diphtheria or scarlet fever. There is no one in a better position to demonstrate preventive medicine than the physician as he goes in and out of the homes of the people.

(*d*) Increased efforts in health education.

We have had examples of the value of widespread efforts in education in connection with some of our communicable diseases. Take, for example, tuberculosis. The mortality from this disease is only a little over one-third of what it was twenty-five or thirty years ago. This

favourable result has been brought about by a campaign of health education which was commenced some thirty years ago, by the establishment of sanitoria and preventoria, by teaching the public that tuberculosis was a curable disease and that a diagnosis of tuberculosis was not necessarily the same as signing a patient's death certificate.

The propaganda must be widespread. The people must be taught the resources of preventive medicine. Unless they have this information, it cannot be expected that they will be quick to adopt measures of prevention. It must be brought to them through the medical profession, through the teaching of public health nurses, and, perhaps most important of all, through our school teachers, who should be so trained that they can give this information to the children in the class rooms.

I desire, in conclusion, to pay a just tribute to the interested, intelligent and zealous medical officers of health who are doing such excellent work in their various fields.

A Study of Tuberculosis in High School—Among other important observations this survey in schools indicated that the difference in percentage of infection between different racial groups is due, not to race, but to differences of exposure, especially in the home; the greater the opportunity for intimate contact the greater the percentage of infection. The author presents adequate data to prove that "the application of various methods, as classroom observation by the teacher, notation of absent periods because of illness, weighing and measuring, or temperature taking, for the selection of cases for special examination, will miss a large number of cases with demonstrable, potentially dangerous and even active tuberculous lesions.

The application of the method of routine testing with intracutaneous tests to at least 0.1 mgm. dosage of tuberculin, and roentgenographic examination of all positive skin reactors will reveal many cases that have not only latent childhood lesions but adult pulmonary lesions in a pre-clinical stage.

Carefully collected data critically analysed—a communication of very definite interest.

Doolittle, S. E., Am. Rev. Tuberc., v. XXIV, No. 5 (Nov.), pp. 491-521.

Statistics in the Field of Mental Hygiene*

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WHILE the term "mental hygiene" now covers a wide field and concerns itself with the mental health of the entire community, the primary object of the mental hygiene movement was to secure better care and treatment of the insane. In this field alone great progress has been made and the standards of mental hospitals are vastly superior to what they were twenty years ago. This has been brought about in various ways but one promising method of securing results has, to a great extent, been neglected in Canada, viz., the collection and use of uniform statistical information. The statistical method must eventually be applied in the various fields of mental hygiene but as a beginning it would seem that we should start, as mental hygiene started, with the mental hospitals, because here we have organized units in which records are already kept.

The care of the insane in Canada being a provincial matter, each province is free to develop its own statistical method and the result has been a great lack of uniformity. The mental hospitals in some provinces collect certain information and keep certain records as to their patients, while the records of hospitals of other provinces are concerned with other matters. There is not even uniformity as to the classification of mental diseases and the diagnoses are made upon different bases in the various provinces. The Quebec hospitals, for example, use a French classification of the psychoses which does not lend itself to comparison with any other province. No doubt the last word has not yet been said on the subject of a proper classification of mental diseases but, until everyone can agree, certain compromises will have to be made in the interests of uniformity. The citation of Quebec as an example does not imply that the other provinces are in agreement, for this is far from the case.

Again, there is the difficulty that the facts recorded in each province are tabulated at the end of their respective fiscal years and, as a result, the statistics that we have are for years ending on five different months. Moreover, in many cases, the provincial governments are slow in publishing the reports of their institutions so that the figures are not available until a year, two years or even longer, after the end of the period with which they deal. One province publishes no report at all. Under these circumstances it is easy to see that, at least from a

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Dominion-wide point of view, our statistics of mental hospitals have not been very valuable. Some co-ordinating agency is necessary to secure uniformity throughout the entire Dominion. Eventually this agency should, and probably will, be the Dominion Bureau of Statistics. In the meantime, the Canadian National Committee for Mental Hygiene is attempting to bring about the necessary uniformity so that the work of the Bureau of Statistics may be principally that of collection and tabulation. It is interesting to note that in connection with the decennial census being taken this year a thoroughgoing census is to be made of the patients in mental hospitals. This is the first time such a census has been taken and should yield some very interesting results. It will, in fact, be the basis for all future statistics in this field. During the past year most of the mental hospital superintendents and provincial commissioners have been seen and the matter of statistics discussed with them. In every case they have been not only greatly interested but extremely co-operative, and it is now pretty well assured that in the near future every mental hospital in Canada will have adopted the uniform statistical system.

From the point of view of information regarding mental patients, this involves the use of the classification of psychoses adopted by the American Psychiatric Association and the American National Committee for Mental Hygiene and in general use in most of the states as well as Ontario and Manitoba for some years. It also involves the collection, on a uniform basis, of information with respect to age, duration of hospital residence, previous attacks, marital condition, nativity, race, education, occupation, economic condition, heredity, environment and other facts concerning patients. Other information will be collected regarding the staffs of the hospitals both as to numbers and classification and a great deal of useful and interesting material will be obtained as to the capital invested in, and the costs of operating, the hospitals.

The annual tabulation of the data secured from the mental hospitals should be of great value. We will for the first time be able to compare our situation in Canada with that existing in the United States where, for a number of years, similar statistical data have been collected. If those responsible for keeping of the records in the hospitals are painstaking and careful to secure accurate information, we may learn something of the etiology of mental disease. Significant studies of such important factors as, for example, heredity, environment, and the effects of alcohol should be possible. We will be able to check up on the effectiveness of the Dominion Government's provisions for medical examination of immigrants. If it is found that a large number of immigrants are finding their way into mental hospitals within a short time after their admission to Canada, the Government will probably see the need of stricter psychiatric examinations of prospective immigrants. The institution of a uniform system of statistics should have

considerable value as a check on the adequacy of the medical inspection provided for immigrants.

Perhaps the greatest value of such a statistical system, however, will be to hospital superintendents and to provincial governments. Superintendents of mental hospitals will be able to keep in touch with what is being done in other hospitals and will have access to figures showing achievements secured and standards maintained in those other hospitals. If a superintendent finds that his recoveries and discharges are consistently below the average or that his mortality rate is high, he will be impelled to take stock of the situation in an attempt to discover what features of other hospitals are superior to his own and how he can introduce better conditions into his own hospital. The figures may show that as compared with other hospitals he is grossly understaffed as to physicians or nurses. He may have one physician in charge of 500 patients where the others have three for a similar number of patients. He may find that the other hospitals which are securing better results have equipment for the provision of hydro-therapy that he lacks, or that a more thoroughgoing system of training nurses seems necessary. He may find his figures of patients employed in the various forms of occupational work lagging away behind others. If he does make such discoveries, he will probably be stimulated to make the necessary improvements. If he finds he needs additional staff or additional facilities and equipment he will be in a strong position when he approaches his government for the necessary funds. He will be able authoritatively to point out the relationship between good results and the facilities for which he is asking, and it will be difficult in the face of the published figures for any provincial government to lag behind in its care and treatment of its insane population. The collection and publication of uniform statistics should have considerable influence in bringing about a standardization of mental hospitals at a high level of efficiency. The same should be equally true of training schools for the mentally deficient. Here the hope will be that governments, as a consequence of results obtained in the three training schools now in existence in Canada, will be stimulated to provide more of these valuable and badly needed institutions.

The use of a uniform statistical system and later, the work of tabulation by the Census Division of the Dominion Bureau of Statistics should result in a considerable saving of time to the clerical staffs of the hospitals. The card system to be used will make record keeping easier than it now is in many hospitals and many hours of work will be saved if arrangements can be made, as it is hoped they will be, to have the cards sent in to the Bureau of Statistics for tabulation. At present, in the provinces where the uniform card system is in operation, each hospital is obliged at the end of the year to compile the information in 18 lengthy tables. This places a considerable burden on the usually shorthanded clerical staff of the hospital.

When the uniform system has begun to work smoothly, attention can be directed towards its improvement and extension. It may develop that certain data collected under this system may prove to be of no value and may be neglected. But there are certainly other facts which should be included. In some cases we will have to wait until a technique for recording certain hospital activities has been perfected. This is especially true in connection with occupational therapy. At present we can tabulate data as to the number of patients employed and rough classifications of the kinds of occupation used but we need more accurate and detailed studies of results achieved with certain types of patients engaged in various forms of occupation. This is only one of the things which should yield important results from the use of the statistical method. It should, for example, be possible to make valuable statistical studies of the results obtained by hydro-therapy, by the use of music, radio talks, gymnastic exercises and instruction, and other forms of recreation.

The rapid increase in the populations of mental hospitals in Canada makes it essential that governments should have in their possession all possible information to enable them to lay down adequate and intelligent programmes for future years. The mental hospitals of Canada had over 2,000 more patients at the end of 1930 than at the beginning of that year. Taking the average annual maintenance cost of a patient at $1.00 a day, we have an increase of $730,000 per annum for the care of the insane. This, however, is only maintenance. The capital outlay necessary to provide adequate bed accommodation for 2,000 patients amounts to about $4,000,000. Interest on this sum at 5% amounts to $200,000 so that the increase in insanity in Canada is requiring an additional expenditure each year of nearly $1,000,000.

Carefully gathered statistics may point the way to methods of saving governments' money. Certainly the magnitude of the problem would indicate the wisdom of spending at least moderate sums on statistical as well as other forms of research. There is, for example, one method by which governments can reduce the necessity for more accommodation and at the same time save on the annual maintenance of patients. This is by the extension of the use of psychiatric social workers to get patients out of mental hospitals into the community and to supervise them in their homes. Within the last year a demonstration along these lines was made by the Canadian National Committee for Mental Hygiene in one of the provinces. The year is not yet up but it is conservative to say that one worker has managed to maintain supervision over 50 patients who are no longer a charge upon the public funds. This one worker will have saved her government over $15,000 in the one year on maintenance charges and has obviated the necessity for additional bed accommodation for 50 patients. More complete studies of what can be done in this way must be made both from the standpoint of the welfare of patients and the saving to govern-

ments. It is clear, however, even from the rough information that we have, that the patients are better placed back in the community and that it would pay a government handsomely in dollars and cents to provide adequate training for a sufficient number of such workers and to pay them good salaries.

Careful statistical studies are also needed as to the work being done in mental hygiene clinics. The technique for such studies is difficult to work out but we should be able to gather information to show their value both from the point of view of the welfare of the patients and the eventual saving of public funds resulting from a decrease in mental disorder, delinquency and dependency. Adequate studies along these lines should place us in possession of powerful weapons for use in urging upon governments and the public the extension of mental hygiene facilities. Without complete and accurate data we must necessarily proceed in the dark. In fact, it seems probable that a better use of statistics may lead to the explosion of a number of popular myths. As a result of statistics collected for a number of years in the United States we can now say definitely, for example, that farmers' wives are no more subject to mental disorder than any other class of persons. In fact, the rate of insanity among farmers' wives is lower than that of any other large class. Again, we should have expected that the present economic depression would have produced a marked increase in juvenile delinquency. This has not been the case in Toronto where the records show a decrease rather than an increase during the depression. These are only two examples to show the need for accurate statistics, rather than guess work, in this field.

Statistics must play a large part in mental hygiene work. We must in the first place, by statistical surveys, get a grasp of the magnitude of the problems with which we are already faced—the problems of mental disorder, mental deficiency, crime, delinquency, dependency, illegitimacy, etc. We must then determine, largely by statistics, how efficacious are the steps being taken to remove and prevent these problems. We must be accurate in gathering our data and careful in interpretation (and here the social worker will be invaluable if properly trained in record keeping), but if these conditions are complied with, we shall be in possession of information of the greatest importance. No public health authority would to-day consider planning a programme without the use of vital statistics and we should look forward to the time when the collection of statistics in the field of mental hygiene is at least as far advanced as is the collection of vital statistics. Until such time, mental hygiene must proceed with some uncertainty and without one of its most useful aids.

Maternal Mortality—A General Survey*

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FOR some years there has been evident interest among both official and unofficial health agencies in the question of deaths among pregnant women. This interest has not been confined to any one country, but has been particularly pronounced in such as are peopled by those of Anglo-Saxon origin. Much has been said by the voluntary agencies and little done by the official; but apropos of neither statement do I wish to appear critical, for I am not sure that the auxiliary groups have had any justification for doing more than talking, and I am hesitant about suggesting a definite field of effort for governmental or professional bodies. The result has been that conditions have, in the main, remained unchanged. The death rate among this group for 1929, the last year that figures are available in Ontario, is approximately the same as the mean of the last ten years. The interest previously implied as being official and semi-official in character, has now become more or less province-wide and there is a more or less insistent demand from the public for action.

One gains little by an examination of conditions in other countries, although one is naturally surprised to find such countries as Scotland, the United States and Austrialia occupying unenviable positions at the top of the list, with 7, 6.6 and 6 deaths per 1,000 births, respectively; and such states as Japan, Italy and France rivaling the Scandinavian nations with rates of 2.8, 2.6 and 2.9, respectively.

Such data naturally compels one to think in terms of any programme which might be in operation in the country presenting these favourable figures. Unfortunately, it has not been found possible to obtain any information as to what such a programme is, or even whether one exists. We do know that midwives serve a large majority of these women at the time of confinement, and we presume that these midwives have various degrees of training. We infer that those cases which present out-of-the-ordinary manifestations are referred to physicians for treatment. I am informed that there is the minimum of hospitalization. It has been suggested that the women may possess certain inherent characteristics which makes child-bearing easy, or that the mode of living of the child-bearing population simplifies pregnancy. On the other hand, that the people in these three countries are better informed individually on the subject of maternal hygiene; that they receive better obstetrical care or that they know more of the supposed advantages of so-called pre-natal care, is certainly untrue. It would seem, therefore, that the logical course to pursue is definitely to establish

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the place of the various factors which are presumed to contribute either favourably or adversely to the maternal death rate. To my knowledge, no such serious study in any large way, has as yet been put into effect. Before we accept any of the suggestions which have been advanced as solutions to this problem, it would seem to me that it would be well if some such survey were initiated.

Suggestions for remedying existing conditions are presented with perennial regularity. One is asked to choose a solution from among the following suggested panacea; namely, the immediate education of all potential mothers as to the value of pre-natal care; the early establishment of adequate hospital facilities for obstetrical cases; a pronounced increase in the amount of time devoted to the instruction of medical students in obstetrics; a realization on the part of the practising physicians of the seriousness of the pregnant state. It has been my own experience that, when a multitude of remedies are advanced for the cure of any condition, it can be taken for granted that the etiology is, in the main, shrouded in doubt.

A casual inspection of the Report of the Registrar-General for Ontario shows that deaths from puerperal causes for the year 1928 divide themselves into the following groups:

Accidents of pregnancy	9.0 per cent
Puerperal haemorrhage	11.4 "
Other accidents of labour	12.9 "
Puerperal septicaemia	30.3 "
Albuminuria	24.5 "
Other causes	11.9 "
	100 per cent

In extending our review of the available statistical data, we find that there have been changes worth noting in these percentages during the last ten years; for example, deaths attributed to accidents of pregnancy have shown a very definite decrease during this period, the figures for 1919 being 19.4 per cent, as compared with the above. There has been no material change in the number of those dying from puerperal haemorrhage, although the number has fluctuated from 7.6 per cent in 1923 to 14.9 per cent in 1922. The figures for other accidents of labour have shown equally wide variations: 14.8 per cent in 1919 to 7.9 per cent in 1923. As for purperal septicaemia, 29.9 per cent died from this cause in 1919, as compared with the figures for 1928; the lowest rate was 15.9 per cent in the year 1922. The figures for albuminuria and allied kidney conditions varied less than those noted for any of the other groups, being 20.1 per cent in 1919, while the average for the ten year period was 23.8 per cent. 23.01 per cent of the deaths are found in the age group of 30-34, the next highest being those between 25 and 29 years. Puerperal haemorrhage is cited as the greatest

contributing cause in the age group between 20 and 22, while septicaemia is given as the highest between 15 and 19 years. Disturbance of kidney functioning occurs most frequently between 20-24 years.

That there has been, during the last ten years, a steady increase in the deaths in the cities and towns with populations of over 5,000, is worthy of comment. The death rate for that portion of Ontario considered as rural was 3.33 per cent, as compared with the urban rate, which is 7.38. It may be possible to explain this wide difference between these two groups, but one wonders if we are to accept, as a satisfactory solution, statements which are largely based on presumption; for example, it is stated that the complicated cases from the country are hospitalized and that such hospitals are located in cities and large towns. While it is presumedly true that potentially serious cases come from the country to the city for hospital care, if this were the major cause for the higher death rate in the cities, one would naturally expect that the percentage of deaths among those going to the city would be higher than that among the residents of the city itself. That this is true has not been established.

We note that while only 20,768 of the total number of births, which in 1928 was 68,510, occurred in institutions, 265 of the maternal deaths came from this hospitalized group; 131, or 33 per cent, presumedly died at home, or in hospitals in smaller cities. No individual seriously interested in the solution of this problem, is prepared to accept as convincing the explanation advanced, without a careful intimate study of all of the factors which might be presumed to have influenced these institutional deaths.

While the basis of pre-natal care is presumably the establishing (at the earliest possible moment following her recognition of pregnancy) of a contact between the expectant mother and the physician who is to attend her during labour, and the satisfactory maintenance of this contact until the conclusion of the post-natal period, much stress is placed on what has been described as "Maternal Hygiene." Without attempting to discredit the value of the advice regularly sent forward to the expectant mother by official and voluntary agencies, one frankly wonders to what extent faithful adherence to the suggestions included in the average publication dealing with this subject influences puerperal septicaemia, accidents of pregnancy, etc.

On the suggestion that the amount of time devoted to either the teaching or practice of obstetrics during the medical course be increased, I have no comments to make. It has been suggested that some of the deaths from the causes listed as "accidents of pregnancy" might be eliminated if the profession took this service more seriously; one wonders if such criticism is well founded. Presuming that there was an equal distribution of the births in any year among the 3,500 physicians practising medicine in Ontario, we find that each physician would annually attend twenty women in labour. If the maternal deaths were

as equally distributed, each physician would lose one such patient once every ten years. In defence of the individual physician, let it be said that it is naturally difficult to arouse him to any great pitch of enthusiasm over a problem which confronts him as rarely as does a death from puerperal causes. The fact that a definite percentage of the physicians do not see obstetrical cases at all, only makes it more difficult for the profession as a group to be seized with the importance of a solution to this question.

While there have been attempts to gather informative data as to reasons presumably responsible for maternal deaths, such attempts as those of the Provincial Health Department of Ontario in 1923 and that of the Department of Pensions and National Health, Ottawa, in 1927, no serious effort has ever been attempted in this country to catalogue the importance of biological, sociological, pathological and obstetrical factors in their true perspective.

In conclusion, I would suggest that some group, in which the profession are numerically well represented, should be appointed for the purpose of a careful investigation of the whole question, and that this should be given the widest possible field of opportunity for research. Until such a group is appointed, I am inclined to think that little can be done to bring about any lessening in the death rate among pregnant women, which is higher than it should be.

The Anti-Tuberculosis Demonstration in Nova Scotia

The five year demonstration of the Nova Scotia Tuberculosis Association, sponsored by the Canadian Tuberculosis Association and aided financially by the Canadian Life Insurance Officers' Association, terminated at mid-summer when its field staff (three diagnosticians and three nurses) and its activities were in a large part taken under the Provincial Department of Health by the Hon. Dr. Murphy. The cost of the demonstration was $130,813.

The results of the demonstration are most gratifying. The tuberculosis death rate for the five years preceding the demonstration was 124 per 100,000; for the five years ending December 31, 1930, it was 106—a reduction of 14.5 per cent; 20 out of 42 incorporated towns and 12 out of 24 municipalities have accepted the responsibility of caring for their tuberculous poor; and most important of all, a tuberculosis service, medical and nursing, for the Province has been established. This latter achievement was the primary aim of the demonstration. Dr. J. J. MacRitchie has been appointed Divisional Medical Officer for western Nova Scotia. The Canadian Life Officers' Association has offered $1,500 to continue some phases of the work of the Nova Scotia Commission, provided that the government contributes a like sum.

Canadian Public Health Association
Ontario Health Officers' Association
JOINT ANNUAL MEETING, MAY 25, 26, 27, 1932

THE CONVENTION THEME AS EXPRESSED BY THE HONORARY PRESIDENT

HONOURABLE DR. JOHN M. ROBB
Minister of Health, Ontario
Honorary President, Canadian Public Health Association, and Ontario Health Officers' Association

"I am firmly of the opinion that during a time of financial stress public health work is urgently needed as a public service even more than in normal times and that bodies, whetherc onstituted on a statutory or a voluntary basis, should make every effort to meet the greater need experienced during a period of depression."

JOHN M. ROBB.

Twenty-First Annual Meeting

THE organization meeting of the Canadian Public Health Association was held in the Parliament Buildings, Ottawa, in November, 1910. The first Annual Meeting was convened in the city

DR. LOUIS I. DUBLIN
President, American Public Health Association

of Montreal in the following year. Only once since its inception has the Association failed to provide the opportunity for those engaged in public health work throughout the Dominion to meet together for the discussion of mutual problems. That occasion was in the memorable month of August, 1914, when the Meeting arranged to be held in Fort William, Ontario, was cancelled.

During all the years of the Canadian Public Health Association's history, the American Public Health Association has extended the most genuine co-operation. Our Meeting this year, marking the twenty-first convention, will be favoured with a visit from the President of the American Public Health Association, Dr. Louis I. Dublin, and of the President-Elect, Dr. John A. Ferrell. Dr. Dublin comes to the meeting not only to bring the greetings of the American Association, but to present an address on "Public Health and the Economic Depression." This address will be given at the General Session on Wednesday afternoon. Dr. Dublin is known for his many contributions to the subject of public health, particularly on the problems of racial and occupational morbidity and mortality, infant and child mortality, the cost of sickness and other economic aspects of public health. In September, 1931, he was elected Third Vice-President and Statistician of the Metropolitan Life Insurance Company. Dr. Ferrell, Associate Director, Internation Health Division of the Rockefeller Foundation, also is known internationally. The Association greatly appreciates the visit of Dr. Ferrell to join in this year's Annual Meeting.

A Programme Worthy of the Occasion

THE strength of the Association to-day is reflected in the activity of each of its sections. Each section has not only urged the necessity for its own sectional meetings and prepared technical programmes of interest to those especially interested in the respective fields, but has also indicated a wider interest by nominating speakers and subjects for the general sessions.

DR. E. L. BISHOP
Commissioner of Health, Tennessee

In planning the programme for the general sessions the central thought was to lay emphasis on the desirability of pressing forward in all our public health work even in the face of the present situation, and on the urgency of maintaining our present health budgets. Few administrators can speak with greater authority than can Dr. E. L. Bishop, State Commissioner of Health of Tennessee. Dr. Bishop will present an address of very practical interest to every health officer at this time, dealing with the relative values of various municipal health activities.

One of the problems facing every municipality and intimately associated with public health is welfare work. Large sums of money are being expended in an attempt to relieve urgent distress. "Public Health and Public Welfare" will be presented by Dr. Haven Emerson, Professor of Public Health Administration, Columbia University, New York. The Association is indeed most fortunate in having this subject discussed by Dr. Emerson, whose intensive studies in this field are so well known. Dr. Emerson will speak on Friday afternoon. Invitations are being extended to social workers throughout the city to attend this session. On the invitation of the Laboratory Section, Dr. Augustus B. Wadsworth, Director, Division of Laboratories and Research, New York State, Department of Health, Albany, will address the Association on "Serum Treatment of Streptococcal Infection".

DR. HAVEN EMERSON
Columbia University, New York

MR. H. P. EDDY
Consulting Sanitarian, Boston, Mass.

THE Programme Committee are very pleased to announce that Mr. H. P. Eddy, Consulting Engineer, Boston, Mass., will speak on "Contributions of the Engineer to Public Health Conservation."

Mr. Eddy is outstanding as a consultant in sanitation and his address will be of great interest. The Association is indebted to the officers of the Section of Public Health Engineering for the visit of Mr. Eddy.

Entertainment

ON Thursday evening the Province of Ontario and the City of Toronto will tender jointly a dinner to the members of the Associations at the Royal York Hotel. This dinner will be the occasion for marking the twenty-first anniversary of the Canadian Public Health Association, and the presidental address will be given by Dr. W. J. Bell, Deputy Minister of Health, Ontario. The Honorable G. S. Henry, Premier of Ontario, the Honorable Dr. J. M. Robb, Minister of Health, and His Worship, Mayor W. J. Stewart will convey to the Convention the greetings of the Province and of the City. The Honorable Dr. Robert J. Manion, Minister of Railways and Canals, Ottawa, will be the guest speaker. It is expected that the addresses will be broadcast.

On Friday afternoon, at the close of the general session, the Community Health Association of Greater Toronto and the Section of Public Health Nursing of our own Association have arranged a tea for the members of the Associations.

Exhibits

DETAILS of the scientific and commercial exhibits will be presented in the May issue of the JOURNAL.

Transportation

IN view of the difficulties and the limitations pertaining to the purchase of tickets on the standard certificate plan, the Committee has decided to recommend the use of the summer tourist plan. Depending on the distance to be travelled, summer tourist fares are cheaper than fare and one-half, as secured by convention certificates, and, in addition, they allow stop-over privileges until October.

Plan to-day to Attend

Programme

CONVENTION HEADQUARTERS, ROYAL YORK HOTEL, TORONTO

(Daylight Saving Time)

Registration—Every member and visitor is requested to register early at the Registration Desk, Convention Foyer.

Presentation of papers,—20 minutes at section meetings, 30 minutes at general sessions.

EXECUTIVE COUNCIL: Members of the Council will kindly note that the meeting of the Council will be held in the Clubroom on the Main Mezzanine floor on Wednesday evening, May 25th, at 8.00 p.m.

FIRST SESSION

Ontario Health Officers' Association

Wednesday, May 25th, 10.30 a.m.—Ball Room

Chairman—Dr. J. H. Radford, Galt, Ontario, President, Ontario Health Officers' Association.

"MILK EPIDEMIC OF PARATYPHOID FEVER, ST. CATHARINES, ONT., 1931"—

Epidemiological Features—Dr. A. L. McKay, Director, Division of Preventable Diseases, Department of Health, Ontario.

Clinical Investigations—Dr. D. V. Currie, M.O.H., St. Catharines.

Bacteriological Studies—Dr. A. L. McNabb, Director of Laboratories, Department of Health, Ontario.

Pasteurizing Equipment—Dr. A. E. Berry, Director, Division of Sanitary Engineering, Department of Health, Ontario.

"Refuse Collection in Urban Centres"—H. S. Nicklin, City Engineer, Guelph, Ontario.

"Ice Supplies for Domestic Use"—A. T. Byram, Assistant Sanitary Engineer, Department of Health, Ontario.

Sections of Social Hygiene and Mental Hygiene

Wednesday, May 25th, 9.15 a.m.

Chairman—Dr. A. Grant Fleming, Professor of Public Health and Preventive Medicine, McGill University, Montreal.

Paper (title to be announced)—Dr. B. T. McGhie, Director of Hospital Services, Ontario Department of Health.

"The Venereal Disease Problem in Canada: Social Aspects"—Dr. F. S. Parney, Department of Pensions and National Health, Ottawa.

"Public Health Education: The Need for a Broader and More Comprehensive Programme"—Dr. Gordon Bates, Canadian Social Hygiene Council, Toronto.

"Evaluation of Social Data from the Mental Hygiene Point of View"—Dr. W. E. Blatz, Professor of Psychology, University of Toronto; Director, St. George's School for Child Study.

Election of Officers for each Section.

Laboratory Section

Wednesday, May 25th, 9.15 a.m.

Chairman—Dr. G. B. Reed, Professor of Bacteriology, Queen's University, Kingston, Ontario.

"The B. Coli Content of Raw and Pasteurized Milk"—Dr. A. J. Slack, Director, Institute of Public Health, London, Ontario.

"Comparison of Methods for the Determination of Milk Solids"—A. R. Bonham, B.A.Sc., F.C.I.C., Division of Laboratories, Department of Health, Ontario.

"Factors Responsible for the Spoilage of Cheddar Cheese"—D. B. Shutt, B.S.A., Department of Bacteriology, Ontario Agricultural College, Guelph.

"Some Observations on the Methylene Blue Reduction Test"—H. R. Thornton, M.A.Sc., Ph.D., Professor of Dairying, College of Agriculture, Edmonton, Alberta.

"The Laboratory History of Diphtheria in Hamilton for the Past Twelve Years"—Dr. William J. Deadman, Director of Laboratories, Hamilton General Hospital.

"Antigenic Properties of a Dissociated Strain of Br. Abortus"—Dr. Ronald Gwatkin, Ontario Research Foundation, Toronto.

Vital Statistics Section

Wednesday, May 25th, 9.15 a.m.

Chairman's Address—S. J. Manchester, Director of Vital Statistics, Ontario.

"Accident Statistics"—Mr. J. F. H. Wyse, Canadian National Safety League, Toronto.

"Sex Differences in Mortality"—Professor John Wyllie, Department of Hygiene and Public Health, Queen's University, Kingston.

"Final Report of Committee on Stillbirths"—Dr. Eugene Gagnon, Director Division of Vital Statistics, Department of Health, Montreal.

SECOND SESSION

General Meeting of the Associations

Wednesday, May 25th, 2.30 p.m.—Banquet Hall

Chairman—Dr. W. J. Bell, Deputy Minister of Health, Ontario; President, Canadian Public Health Association.

Address of Welcome—His Worship Mayor W. J. Stewart.

Address of the Honorary President—Hon. Dr. J. M. Robb, Minister of Health, Ontario.

"Public Health and the Economic Depression"—Dr. Louis I. Dublin, President, American Public Health Association; Third Vice-President and Statistician, Metropolitan Life Insurance Company.

"Some Aspects of Meningitis"—Dr. J. G. FitzGerald, Director, School of Hygiene and Connaught Laboratories, University of Toronto.

"The Growth of Mental Hygiene" . C. M. Hincks, Medical Director, National Committees for Mental Hygiene of the United States and Canada.

THIRD SESSION

Ontario Health Officers' Association

Thursday, May 26th, 9.15 a.m.—Ball Room

Chairman—Dr. J. H. Radford, M.O.H., Galt, Ontario.

Presidential Address—Dr. J. H. Radford.

"Maternal Mortality"—Dr. H. B. Van Wyck, Toronto General Hospital.

"DIARRHOEA AND ENTERITIS UNDER TWO YEARS OF AGE"—

(a) "Clinical Aspects"—Dr. Alan Brown, Physician-in-Chief, Hospital for Sick Children, Toronto.

(b) "Public Health Aspects"—Dr. Neil E. McKinnon, Connaught Laboratories and School of Hygiene, University of Toronto.

"The Value of Public Health Nursing as Practised during the Past Decade"—Miss Laura Gamble, Reg. N., Late Director, Division of Nursing, Cattaraugus County Demonstration.

"Whooping Cough"—Dr. D. T. Fraser, Connaught Laboratories and School of Hygiene, University of Toronto.

At the close of this session a demonstration of the Shaffer Method of Resuscitation will be given.

Laboratory Section

Thursday, May 26th, 9.15 a.m.

Chairman—Dr. E. G. D. Murray, Professor of Bacteriology, McGill University, Montreal.

"Pathological Findings in Encephalitis Following Measles"—Dr. I. H. Erb, Pathologist, Hospital for Sick Children, Toronto.

"Examination of Pathological Material Removed at Operation"—Dr. James Miller, Professor of Pathology, Queen's University, Kingston.

"Flocculation Reactions of Vaccinia Virus"—Dr. James Craigie, Connaught Laboratories and School of Hygiene, University of Toronto.

"Variation in Colony Form and Antigenic Structure of Tubercle Bacilli"—Dr. G. B. Reed, Dr. C. E. Rice and Dr. J. H. Orr, Department of Bacteriology, Queen's University, Kingston.

"Stabilized Toxin for the Schick Test"—Dr. P. J. Moloney and Dr. Edith M. Taylor, Connaught Laboratories and School of Hygiene, University of Toronto.

"Two Recent Cases of Anthrax from Infection in Tannery"—Dr. George Laughlen, Toronto, and Dr. A. L. McNabb, Director of Laboratories, Ontario Department of Health.

"A Simple Method of Micro-pipette Isolation of Single Cells"—Dr. Roy Fraser, Professor of Bacteriology, Mount Allison University, Sackville, N.B.

Vital Statistics Section

Thursday, May 26th, 9.15 a.m.

Chairman—S. J. Manchester, Director of Vital Statistics, Ontario.

Epidemiological Programme—

"The Mortality in Ontario of Four Communicable Diseases of Childhood"—Mary A. Ross, M.A., Department of Epidemiology and Biometrics, School of Hygiene, University of Toronto.

"The Smallpox Epidemic in Vancouver, 1932,"—Dr. W. J. McIntosh, Medical Officer of Health, Vancouver, B.C.

Paper (title to be announced)—Dr. Gordon P. Jackson, Medical Officer of Health, Toronto.

Round Table Discussion on Registration Problems.

Public Health Engineering Section

Thursday, May 27th, 9.15 a.m.

Chairman—G. H. Ferguson, Department of Pensions and National Health, Ottawa.

SYMPOSIUM: "SWIMMING POOLS"—

(a) "Construction of Pools"—E. H. Darling, Consulting Engineer, Hamilton, Ontario.

(b) "Operation of Pools"—R. F. Heath, Chemist, Department of Health, Toronto.

(c) "Disinfection of Pool Water"—A. V. De Laporte, Chemist in Charge, Experimental Station, Department of Health, Ontario.

"The Successful Fight Against Typhoid Fever in Canada During the Past Twenty Years, with Special Reference to the Controlling Factors"—Norman J. Howard, Director, Filtration Plant Laboratories, Toronto.

"Importance and Value of Softening Municipal Water Supplies"—R. E. Thompson, Chemist, Filtration Plant, Toronto.

Appointment of Committees and Consideration of Reports.

Industrial Hygiene Section

Thursday, May 26th, 9.15 a.m.

Chairman—Dr. J. G. Cunningham, Director, Division of Industrial Hygiene, Department of Health, Ontario.

"ADULT DISEASE AS A PUBLIC HEALTH PROBLEM"—

(1) "Adult Diseases as Seen in an Industrial Population"—Dr. R. Vance Ward, Department of Public Health and Preventive Medicine, and the Industrial Clinic, McGill University, Montreal.

(2) "Some Physical Findings in Young Adults (Male) as Shown in the Ten Year Period of a University Health Service"—Dr. G. D. Porter, Director, Student Health Service, and Dr. D. L. MacLean, School of Hygiene, University of Toronto.

(3) "Heart Disease in Adult Life"—Dr. J. A. Oille, Toronto General Hospital and Faculty of Medicine, University of Toronto.

(4) "Some Observations on the Spread of Adult Tuberculosis"—Dr. A. R. Riddell, Division of Industrial Hygiene, Department of Health, Ontario.

(5) "Recent Observations in Pneumonia"—Dr. M. H. Brown, Connaught Laboratories and School of Hygiene, University of Toronto.

Election of Officers.

FOURTH SESSION

General Meeting of the Associations

Thursday, May 26th, 2.15 p.m.—Banquet Hall.

Chairman—Dr. W. J. Bell, Deputy Minister of Health, Ontario; President, Canadian Public Health Association.

"Contribution of the Engineer to Public Health Conservation"—Mr. H. P. Eddy, Consulting Sanitarian, Boston, Massachusetts.

"Early Diagnosis in Cancer"—Dr. G. E. Richards, Director, X-Ray Department, Toronto General Hospital.

"What to Cut in the Public Health Programme in the Present Crisis"—Dr. E. L. Bishop, Commissioner of Health, Tennessee.

Paper (title to be announced)—Dr. Alphonse Lessard, Director, Provincial Bureau of Health and Public Charities, Quebec.

Presentation of the Reports of the General Secretary, the Honorary Treasurer and of the Editorial Board of the JOURNAL.

FIFTH SESSION

Thursday, May 26th, 7.30 p.m.—Royal York Hotel

Dinner tendered jointly by the Province of Ontario and the City of Toronto to the members of the Associations, under the patronage of Honorable G. S. Henry, Premier of Ontario, Honorable Dr. J. M. Robb, Minister of Health, and His Worship Mayor W. J. Stewart.

Presidential Address—Dr. W. J. Bell, Deputy Minister of Health, Ontario.

Guest Speaker—The Hon. Dr. Robert J. Manion, Minister of Railways and Canals, Ottawa.

SIXTH SESSION

Ontario Health Officer's Association

Friday, May 27th, 9.15 a.m.—Ball Room

Chairman—Dr. J. H. Radford, Galt, Ontario, President, Ontario Health Officers' Association.

"An Acceptable Programme of Diphtheria Immunization" (with moving picture film)—Dr. A. L. McKay, Director, Division of Preventable Diseases, and Miss Mary Power, B.A., Director, Division of Public Health Education, Ontario Department of Health.

"Specific Prevention of Scarlet Fever in Hospitals"—Dr. Beverley Hannah, Medical Director, Riverdale Isolation Hospital, Toronto.

"Serum Therapy of Streptococcal Infections"—Dr. Augustus B. Wadsworth, Director, Division of Laboratories and Research, New York State Department of Health, Albany.

"The Annual Report of the Medical Officer of Health"—Dr. R. D. Defries, Connaught Laboratories and School of Hygiene, University of Toronto.

"The Medical Certificate of Death"—Mr. E. S. Macphail, Dominion Bureau of Statistics, Ottawa.

Election of Officers.

Laboratory Section

Friday, May 27th, 9.30 a.m.

Chairman—Dr. G. B. Reed, Professor Bacteriology, Queen's University, Kingston.

"Bacteriological Findings in Cholecystitis of Goats"—Dr. F. W. Schofield, Professor of Bacteriology and Pathology, Ontario Veterinary College, Guelph.

"Bacterial Flora of Animals as Source of Confusion in Laboratory Experiments"—Dr. W. L. Holman, Professor of Bacteriology, University of Toronto.

"Sterilization of Eating Utensils"—Dr. R. St. J. Macdonald and Grace M. Freeborn, B.A., Department of Public Health and Preventive Medicine, McGill University, Montreal.

"Staphylococcal Toxin and Antitoxin"—Dr. C. E. Dolman, Connaught Laboratories, University of Toronto.

Paper (title to be announced)—Dr. W. T. Mitchell, Animal Diseases Research Institute, Hull, Quebec.

"Dental Infection"—Dr. Gordon Cameron, Professor of Bacteriology, Faculty of Dentistry, University of Toronto.

"Comparison of Cultural Methods and Animal Inoculation for Isolation of Tubercle Bacilli"—Dr. A. L. McNabb and Dr. W. M. Wilson, Division of Laboratories, Ontario Department of Health.

Election of Officers.

Public Health Engineering Section

Friday, May 27th, 9.15 a.m.

Chairman—G. H. Ferguson, Department of Pensions and National Health, Ottawa.

"Municipal Expenditures for Sanitary Works"—R. C. Harris, Commissioner of Works, City of Toronto. (Presented by G. G. Powell, Deputy City Engineer, Toronto.)

"Planning Sewerage Systems for Public Health Requirements"—J. Clark Keith, Chief Engineer, Essex Border Utilities, Windsor, Ontario.

"Incineration of Municipal Refuse"—J. Ross Menzies, District Engineer, Department of Pensions and National Health, Montreal.

Election of Officers.

General Business.

Vital Statistics Section

Friday, May 27th, 9.15 a.m.

Chairman—S. J. Manchester, Director of Statistics, Ontario.

"Report of Committee on Racial Origin"—Mr. A. P. Paget, Registrar, Division of Child Welfare, Department of Pensions and National Health, Ottawa.

"Children's Epidemics in Canada, 1921 to 1930"—Dr. Helen MacMurchy, Chief, Division of Child Welfare, Department of Pensions and National Health, Ottawa.

"Preliminary Report of a Study of the Incidence of Certain Communicable Diseases Among School Children"—Dr. J. T. Phair, Director, Division of Child Hygiene, Department of Health, Ontario.

"Report of the Committee on Non-Resident Births and Deaths"—Mr. T. E. Ashton, Statistician, Department of Public Health, Toronto.

Discussion—Dr. Paul Parrot, Division of Vital Statistics, Provincial Bureau of Health, Quebec.

Election of Officers.

Public Health Nursing Section

Friday, May 27th, 9.00 a.m.

Chairman—Miss Nora Moore, Reg. N., Division of Public Health Nursing, Department of Public Health, City of Toronto.

SYMPOSIUM ON PUBLIC HEALTH NURSING—

(1) "A Review of the Chapter on Public Health Nursing in Dr. Weir's *Survey of Nursing Education in Canada*"—Miss M. L. Moag, Reg. N., Victorian Order of Nurses, Montreal.

(2) "How the Psychiatrist Looks at Public Health Nursing"—Dr. W. T. B. Mitchell, Director, Mental Hygiene Institute, Montreal.

(3) "How the Private Physician Looks at Public Health Nursing"—Dr. A. M. Jeffrey, Toronto.

(4) "How the Public Looks at Public Health Nursing"—Mrs. H. P. Plumptre, Toronto.

(5) "How the Public Health Nurse Looks at Herself"—Miss B. E. Harris, Reg. N., Department of Health, Oshawa, Ontario.

Election of Officers.

SEVENTH SESSION

General Meeting of the Associations

Friday, May 27th, 2.15 p.m.—Banquet Hall

Chairman—Dr. W. J. Bell, President, Canadian Public Health Association.

"Tuberculosis"—Dr. David A. Stewart, Director, Sanatorium Board of Manitoba, Ninette, Man. (Presented by Dr. F. W. Jackson, Deputy Minister of Health and Public Welfare, Manitoba.)

"Public Health and Public Welfare"—Dr. Haven Emerson, Professor of Public Health Administration, Columbia University, New York.

"The Venereal Disease Situation in Canada"—Dr. F. S. Parney, Department of Pensions and National Health, Ottawa.

Presentation of the Reports of the Executive Council, Nominating and Resolutions Committees.

Afternoon Tea Arranged by the Community Health Association of Greater Toronto and the Public Health Nursing Section, Canadian Public Health Association.

Editorials

HOW CAN PUBLIC MONEY BE SAVED?

AT no time since the Association was formed, not even during the War, have general conditions required such strenuous effort under the handicap of restricted public health budgets. Where and how can public money be spent best? Where and how can public money be saved best? Even those in the field, who formerly escaped much of the responsibility for the financial outlay involved, are now face to face with these questions. The urgency of conditions demands that expenditures be kept at a minimum while the maximum in results is necessary if the public health is even to be maintained at its present standard. There are no funds available for new undertakings, the need for which is evident and the return for the expenditure assured. Even established programmes are in grave danger of being curtailed. Every expenditure, small and large, every public health activity, calls for discriminating judgment, a judgment based on fact rather than impressions. And yet how difficult it is to array these very facts for appraisal of values while the question awaits decision.

In reading the preliminary programme one is struck by the timeliness of the subjects in this regard. One is struck by the manner in which the above questions are answered. "The importance of the problem and the method of its solution" is the theme throughout the meeting. There is no evasion of controversial questions. The present state of public health activity is brought into the open for frank open discussion which will succinctly array the facts, *pro* and *con*, of many problems. Here indeed is indicated an opportunity to gain practical information of a most reliable character, based on vast accumulated experience, critically analyzed and accurately appraised. To miss this meeting is to lose an opportunity to learn how public money can be best spent and saved. Those engaged in any form of public health work cannot, for those days, be as profitably employed otherwise. The Editorial Board extends heartiest congratulations to the Programme Committee for the excellent aggregation of subjects and speakers it has achieved.

PUBLIC HEALTH NURSING

RUBY M. SIMPSON, Reg.N., and MRS. GEORGE HANNA, Reg.N.

The Survey of Nursing Education in Canada

EUNICE H. DYKE, Reg.N.

Director of Public Health Nursing, Department of Public Health, Toronto, Ont.

THE Canadian Medical Association and the Canadian Nurses Association united their forces to study the nursing situation in Canada. In two brief years they have assembled facts from the nine provinces which will revolutionize the system of nurse education and the organization of nursing services. The committee responsible for the survey was Dr. G. Stewart Cameron, of Peterboro; Dr. A. T. Bazin, Chief Surgeon of the Montreal General Hospital; Dr. Duncan Graham, Professor of Medicine, University of Toronto; Miss Jean Gunn, Superintendent of Nurses, Toronto General Hospital; Miss Kathleen Russell, Director of the Department of Nursing, University of Toronto; and Miss Jean Browne, Secretary of the Junior Red Cross Society of Canada. The Director was Dr. G. M. Weir, Professor of Education and Head of the Department of Education, University of British Columbia.

The question may be asked why the committee and the Director have presented a report dealing with such a complex situation after only two years of observation and analysis. This action is consistent with the method of the survey which has been to enlist the united interest of physicians, nurses and the general public. No more effective means could have been devised of enlisting united interest than the publication of this early report accompanied as it has been by plans for its considerationby the medical and the nursing professions and by the general public through the press.

In the Foreword and the Preface, Dr. Cameron and Dr. Weir present the survey as a beginning for thought and action rather than as the conclusion of the matter. At one point the Director refers to the next survey in the confident hope that the facts of the near future will be happier than those of the moment, a confidence which is justified by the efforts already under way in provincial and national associations to study the facts presented.

The evidence of the survey is conclusive on many points. Among these are that schools for nurses are not financed and organized as schools; the selection of students, their number, the curriculum and the teaching methods are not governed by public needs; the so-called schools are graduating nurses in too large numbers for resident service in homes and hospitals rather than for the developing public health services which are crippled by a shortage of qualified nurses; some system differing from the present one of direct payment by the patient must be created to provide

essential nursing care in illness as well as in health.

With recognition of the problems which the survey precipitates for hospital boards, particularly those of the smaller hospitals and with sympathy for the nurse who learns for the first time that the work to which she has given her youth is not in the best interest of the public, our profession must deal with the evidence of the survey. The conventions of our provincial and national associations will reveal the quality of our response to the evidence presented by the survey. Will our consideration of the recommendations based on that evidence reveal the will to harmonize our loyalty to traditional methods and interests with the greater loyalty of constructive thought for the future?

Nurses who, like myself, have not shared the task of this national study of the nursing situation, will acknowledge their debt to the Director and the busy physicians and nurses who formed the committee. Faced with our obligation to study those 581 closely-printed pages, we glimpse the work which the courageous and self-sacrificing committee has done for us during the past two years.

Each one of us will turn first to the chapter on the Private Duty Nurse, the Institutional Nurse, the Public Health Nurse or the Superintendent of Nurses. There we find information based on the questionnaires we answered so grudgingly and upon conferences with the Director in each of the nine provinces. Personal backgrounds, intelligence quotients, training, employment, salaries and personal satisfactions in our jobs are analyzed with the result that we cease to be puzzled at the dissatisfaction of the public and the two professions with the nurse's place in the national life.

The public health nurse will appreciate the public health attitude which permeates the whole report. The phrase "health services" is used repeatedly when dealing with private and hospital practice in relation to public needs. Our own chapter places an emphasis, lacking in other sections of the report, upon divergence of the preventive and curative aspects of public health organization and personnel. We note that only ten directors of public health nursing were called upon for opinions and find no reference to the number and distribution of medical officers of health. It is possible that this chapter has been influenced too strongly by the work of the public health nurse in the school rather than by other essential community relationships which are indicated in important sections of the report.

All sources of information about the public health situation in Canada agree that the nurses are inadequate in number, selection and preparation. The vision of our future task as indicated in various chapters of the survey is even more convincing on these points than our opportunities in 1932. The chapter on the Nurse and the Medical Profession states: "One outstanding exception to the general report of a surplus among graduate nurses of all classes combined must be made. The preponderance of medical evidence, as submitted by 1,475 doctors, was to the effect that, while the surplus of graduate nurses as a total aggregation was fairly large (34 per cent) nevertheless, there was an actual shortage

of public health nurses. The types of public health nurse in which a shortage was reported were: Visiting Nurse, Industrial Nurse, Victorian Order and Red Cross." "In the judgment of the Survey, an immediate increase of 20 per cent in the number of public health nurses in Canada generally, and of 40 per cent in the Maritime Provinces, would mean an excellent investment of money. This increase should not take place more rapidly than the facilities for effective administration, including supervision and control in service, will permit. Public health nurses must be carefully selected and thoroughly trained if they are to succeed. Proper coordination to prevent overlapping of services should also be maintained."

The public health sections of the provincial and national nursing association must decide whether to limit their consideration of the report to the recommendations which conclude the chapter on the Public Health Nurse or to include consideration of other topics touched upon, topics such as our relation to the hospital school for nurses as students and as teachers and the part we may be called upon to play in the organizations which are proposed for placing and supervising the various types of resident care of the sick in the homes. We believe that an emphasis upon the unity of the nursing profession's interests and services will do most at this time to further the purposes of the Canadian Medical Association and the Canadian Nurses Association.

The Survey opens with references to the part played by representative nurses in the earlier days. It presents Jean Mance, the first Canadian nurse, as a woman who was interested in everything that affected her community's welfare and incidentally in the administration of a hospital and the care of the sick. In that spirit, the Survey deals with the Canadian nurses.

THE BIENNIAL MEETING OF THE CANADIAN NURSES' ASSOCIATION

FOR the second time in its history the biennial meeting of the Canadian Nurses' Association will be held in the Maritimes. The convention city is Saint John, New Brunswick, and the dates June 21-25 inclusive.

The preliminary programme promises strength in point of guest speakers and general content. The sessions will be devoted to business and to a study of the Weir Report of the Survey of Nursing Education in Canada, a report recently released from the press and the result of five arduous years on the part of a joint study committee of the Canadian Medical Association and the Canadian Nurses' Association.

That the Hon. Vincent Massey, P.C., LL.D., will discuss the report from the angle of the public, needs none other than superlative comment. The point of view of the medical profession will be presented by the Joint Study Committee and that of the educationist by Professor F. Clarke of McGill University. The dinner speaker, Professor Roy Fraser of Mount Allison University, will discuss the report from the standpoint of the scientist. Such is the intellectual menu, distinctive and chosen with meticulous care.

And what of general nursing ses-

sions? Three general topics will receive consideration, namely, The Approved Training School, The Cost Analysis of Nursing Education, and The Distribution of Nursing Service. Sub-topics relative to each will be discussed briefly by selected nurses throughout the Dominion, and ample time reserved for general discussion. Section sessions, Nurse Education, Private Duty, and Public Health have been prepared with discrimination and will deal with the varied problems of these fields.

Plans of the hostess organization already divulged reflect hospitality as unique as it is genuine. At so early a date many plan to attend the biennial convention, participating in a collective, dispassionate study of nursing problems. Will you join them?

Florence H. D. Emory, Reg.N.

REPORTED CASES OF CERTAIN COMMUNICABLE DISEASES IN CANADA* BY PROVINCES—FEBRUARY, 1932.

Diseases	P.E.I.	Nova Scotia	New Brunswick	Quebec	Ontario	Manitoba	Saskatchewan	Alberta	British Columbia
Diphtheria	1	21	3	147	170	49	35	2	11
Scarlet Fever	2	77	89	279	451	54	24	23	23
Measles	—	1	5	1729	4198	171	85	42	2660
Whooping Cough	—	51	1	212	542	63	14	3	51
German Measles	—	—	—	42	44	†	1	13	48
Mumps	—	62	—	‡	890	91	34	53	92
Smallpox	—	—	—	—	21	5	30	—	27
Cerebrospinal Meningitis	—	1	—	1	3	—	—	1	—
Anterior Poliomyelitis	—	—	—	—	—	—	—	—	—
Typhoid Fever	—	—	—	57	22	4	8	10	4
Trachoma	—	—	—	—	—	60	1	—	—

*Data furnished by the Dominion Bureau of Statistics, Ottawa.
†Not reportable.
‡Not reported.

PUBLIC HEALTH EDUCATION

MARY POWER, B.A.

The Hamilton Diphtheria Exhibit

HAMILTON'S achievement in the nearly complete elimination of diphtheria is well recognized, not only on this continent but also in Europe; much less is known, however, of the means by which this has been accomplished and by which the reduction is maintained. Having a satisfactory immunizing agent is only part of the problem of the control of diphtheria; another part of the problem, too often neglected, is the broad application of the immunizing agent, toxoid. Recently an exhibit was prepared which has attracted a great deal of attention,

so much, in fact, that a request came from Edinburgh for a duplicate. There it was placed on display at the Hygiene Exhibition, and it has now been moved to the Museum of the Usher Institute of Public Health as a permanent exhibit. Among the many unique features used by Dr. James Roberts, Medical Officer of Health, Hamilton, to place directly before the public the extent of the problem and the methods of its solution, this exhibit ranks as one of the most important.

Against a suitable background two maps of the city are shown, one so dotted with little green and black pins that in many sections it is impossible to see the streets. This is the map of Hamilton for 1922, which shows, by means of green pins, that in that year there were 747 cases of diphtheria in the city and indicates by black pins 32 deaths. The other map shows the Hamilton of 1931 with but five pins, none of which is black, indicating that in this year there were only five cases and no deaths.

One of these maps is placed above a little cemetery which tells its own tragic tale by means of 44 crosses, indicating as many deaths from diphtheria in 1920. The other map hangs above an unused graveyard of 1931 in the middle of which stands a signboard on which is written the one word—"Vacant." Between these two extremes are the graveyards of 1922, having 32 crosses, that of 1925 having 14 crosses, that of 1929 having one

cross, and that of 1930 having two crosses.

The exhibit thus shows, in a striking manner, not only the menace of diphtheria even in recent years before active immunization was used, but also the most convincing evidence of the value of widespread immunization —and it is as inexpensive as it is useful.

NEWS AND COMMENTS

P. A. T. SNEATH, M.D., D.P.H.

THE Canadian Conference on Social Work, which will meet in Winnipeg on June 7, 8 and 9, 1932, is offering a prize of $25.00 for the best one-act play depicting some phase of social welfare work. Its presentation should occupy not less than twenty minutes and not more than forty minutes and it shall neither have been published nor produced before being submitted. Manuscripts should be sent by registered post to the secretary, Mr. Percy Paget, 331 Legislative Building, Winnipeg, from whom further details may be obtained.

British Columbia

DR. A. K. Connolly of Williams Lake has resigned, on account of ill health, the positions of Medical Health Officer and Medical Inspector of Schools for that district. Dr. G. W. Ross has been appointed to succeed him.

Dr. J. W. Vosburgh has been appointed Medical Health Officer and Medical Inspector of Schools of Stewart, B.C.

Miss E. G. Allan, a graduate of the Public Health Nursing course, University of British Columbia, 1930-31, has been appointed as Public Health Nurse at Ladysmith, B.C.

The Commission investigating irregular practitioners in British Columbia concluded its hearings on February 3rd.

Alberta

MISS Jean E. Browne, Director of the Junior Red Cross, was the guest speaker at the annual meeting of the Alberta Association of Registered Nurses in Edmonton in March.

The Council of the College of Physicians and Surgeons of Alberta have elected the following officers for 1932: Dr. H. W. McGill, Calgary, President; Dr. W. A. Wilson, Edmonton, Vice-President; and Dr. George R. Johnson, Calgary, Registrar-Treasurer. The Council has intimated to the Provincial Department of Health its willingness to cooperate in providing immunization for school children at a group rate. The functions of the Provincial Medical Association and of the College of Physicians and Surgeons have been combined in order to cut the cost of administration.

Saskatchewan

THE Anti-Tuberculosis League reports that during 1931 almost two cases were treated for each death that occurred during the previous year; as many ex-patients were reviewed during the year as had received treatment during the past three years; and almost three contacts were examined for each active case discovered during the year.

Valuable results of the work of the League are shown in the following table of admissions to sanatoria:

	Early	Moderately Advanced	Far Advanced
1928	14.29%	17.39%	68.32%
1929	20.64%	14.22%	65.14%
1930	23.44%	19.11%	57.45%
1931	25.85%	23.38%	50.77%

The Saskatchewan Cancer Commission opened the first cancer clinic in Saskatchewan on December 21st in the Regina General Hospital. A second clinic was opened in the Saskatoon City Hospital on January 4th.

Manitoba

THE tablet presented by the Manitoba Medical Association and the Winnipeg Medical Society to commemorate the 98th British Medical Association meeting, in Winnipeg, in August, 1930, has been installed in the south wing of the Provincial Parliament Buildings.

During 1931, fourteen additional municipalities carried out toxoid campaigns, thus bringing the number of Manitoba rural children who have received immunization against diphtheria to approximately 50,000. The number of cases of diphtheria in 1931 was lower than ever previously recorded for the Province.

The Department of Health has distributed sodium citrate solution in order to facilitate the use of convalescent whole blood in the prevention of measles, which is now epidemic in the Province.

Ontario

MISS Edna Moore has returned from New York and taken the position of Chief Nurse with the Provincial Department of Health.

Dr. A. J. Slack has been appointed Director of the Institute of Public Health and Dean of the Faculty of Public Health in the University of Western Ontario, London.

Important changes in the staff of the Ontario Hospitals are announced by Hon. J. M. Robb, Minister of Health. Dr. W. C. Herriman will succeed Dr. W. K. Ross in Toronto. Dr. D. O'Gorman Lynch is being transferred from London to Penetang, where he will be Superintendent. Dr. George C. Kidd is leaving Penetang for Cobourg, where he will take the position left vacant by Dr. Herriman.

New Brunswick

THE appointment of Dr. William Warwick as Chief Medical Officer of the Province has been confirmed. Dr. Warwick succeeds Dr. G. G. Melvin, who is at present recuperating his health in California. Dr. Warwick carries to his new position the best wishes of the whole profession. His confrères at the Health Centre at Saint John recently made him the recipient of a complimentary address and a fine piece of Sheffield plate.

The Saint John Association for the Prevention of Tuberculosis is purchasing a fluoroscopic unit for use in the clinic.

Prince Edward Island

ARRANGEMENTS have been made whereby the Department of Health, Ontario, will lend Dr. E. A. Clark, a member of the staff of the Ontario Hospital at Hamilton, to the Prince Edward Island Government to aid in reorganizing the psychiatric services and in the development of a mental health programme for the Province.

Books and Reports

D. T. Fraser, B.A., M.B., D.P.H.; R. R. McClenahan, B.A., M.B., D.P.H.

Principles and Practices in Public Health Nursing, including Cost Analysis. *Prepared by the National Organization for Public Health Nursing. Publishers, The Macmillan Co., New York,* 1932. 122 *pages. Price* $1.75.

This is a handbook prepared by a committee of the National Organization for Public Health Nursing to be used in conjunction with two former publications of that organization: the Board Members' Manual and the Manual of Public Health Nursing. The preparation of the handbook was undertaken by a committee including such well known authorities as Haven Emerson, M.D., Mary S. Gardner, R.N., and Marguerite A. Wales, R.N. For assembling the content of Part 1, the reader is indebted to Ann Doyle, R.N.

The purport of the handbook is to assist those charged with the organization, administration and supervision of public health nursing work, to determine (*a*) the accepted principles and practices in this field, and (*b*) the cost of service if such standards are to be maintained.

Part 1 deals with the quality of approved public health nursing service. Twelve general principles are enunciated. Valuable chapters are devoted to the qualifications and salaries of professional personnel and to supervision, including the administrative and advisory types. Another outlines standards for an accepted educational programme with recommendations regarding pupil nurse affiliation. Consistent with the preventive point of view, a chapter is written on the health of the staff.

Part 2 gives consideration to methods for computing the cost of a visit. Its content has been determined by a recent study of a selected group of health organizations in the United States of America, their staffs varying from one to upwards of one hundred nurses. Certain general recommendations are made and a special computation considered. Forms for use in calculating such costs are shown. An appendix to Part 2 portrays selected tables, one of which indicates the percentage of field nurse's time spent in various activities.

Altogether the handbook offers a lucid, concise and analytical presentation of public health nursing principles and their application. The brevity of the book has necessitated a nice discrimination in the choice of material. Naturally the presentation is primarily that of problems as reflected in the United States, although, in varying degrees, the content will prove applicable to other countries. The need of the book cannot be challenged, and to those responsible for determining and guiding policies relating to standards and cost of service, its value is unquestioned.

F. H. M. E.